

In the Specification

Amend paragraph 8 on page 4 as follows:

[0008] Preferably, the carburetor body defines an air bypass passage channel which communicates directly between the air inlet region upstream of the choke valve and the mixture outlet region of the mixing passage. A threaded bypass screw or valve controllably restricts the bypass passage channel to fine tune the fuel-and-air mixture ratio to obtain stable engine running conditions at idling speed. Preferably, when the throttling choke valve is not in the idle position, a rich mixture of fuel-and-air is promoted via a vent passage and an isolation valve which communicates between a near atmospheric air source and the reference passage when the isolation valve is in the open state.

Amend paragraph 13 on page 5 as follows:

[0013] FIG. 3 is a cross-section of ~~a modification of~~ the charge forming apparatus having a solenoid-type isolation valve shown in a closed state when the throttling choke valve is in the idle position, and taken along line 3-3 of FIG. 1;

Amend paragraphs 29 - 31 on page 12 as follows:

[0029] Preferably, the idle speed of the engine is fine tuned or adjusted via an idle adjustment screw valve 78 which is adjusted threadably to partially restrict an air bypass passage channel 80 defined by the body 18 and extending between a bypass aperture 82

exposed to near atmospheric pressure upstream of the throttling choke valve 12 and a bypass orifice 84 opening into the mixture outlet region 28 of the fuel-and-air mixing passage 16. The idle adjustment screw valve 78 is primarily used to adjust for engine-to-engine variations and is particularly advantageous to meet idle specification requirements of an engine manufacturer. With a fuel nozzle 26 diameter of 0.71 mm, the bypass orifice 84 minimum diameter is preferably approximately 3.7 mm.

[0030] Preferably, the throttling choke valve 12 is releasably held in the idle position 62 by an exterior detent lever (not shown) such as that disclosed in U.S. Patent Application Serial No. 09/982,062, filed October 18, 2001, Number 6,561,496, to Gliniecki et. al., issued May 13, 2003, and incorporated herein by reference.

[0031] Referring to FIGS. 3 and 4, a modification an additional feature of the present invention is illustrated having an isolation valve 86 of a solenoid-type used for partially diverting the reference passage 52 to the atmospheric air source 20 upstream of the throttling choke valve 12 when the isolation valve 86 is in an open state 87 and the throttling choke valve 12 is in the open position 50 or the closed position 74, but not when the throttling choke valve 12 is in the idle position 62. Exposing the atmospheric pressure source 20 directly to the reference passage 52 promotes a rich fuel-and-air mixture to flow to the intake manifold which is needed for cold starts and for higher than idle rpm running conditions. When the throttling choke valve 12 is in the idle position 62, the isolation valve 86 is in a closed state 89 (as best shown in FIG. 3), depriving the reference chamber 44 of an atmospheric air source in order to promote a lean fuel-and-air mixture.

Amend paragraph 35-39 on pages 14-15 as follows:

[0035] FIGS. 5 - 7 illustrate a modified mechanical isolation valve 86' which replaces the solenoid, ~~the actuated~~ isolation valve 86 and is integrated with the rotating shaft 106 106' of the throttling choke valve 12 12'. The shaft 106 106' is ~~rotateably~~ rotatably seated within a bore 108 carried by the body 18 18' and extends transversely through the air inlet region 14 14'. The plate 64 64' of the throttling choke valve 12 12' is engaged rigidly to the shaft 106 106' and rotates or pivots with the shaft 106 106' between the closed and open positions 74 74', 50 50'. The valve chamber 88' is part of the bore 108' and is generally defined between the body 18' and the shaft 106' and is further isolated from the air inlet region 14 14' by a tight radial fit or close tolerance between the body 18 18' and a cylindrical portion of the shaft 106 106' disposed between the air inlet region 14 14' and the valve chamber 88 88'.

[0036] Like the solenoid-type isolation valve previously described, the reference port 94', the vent port 102' and the vacuum port 96' of the integrated isolation valve 86' are carried by the body 18 18' and disposed at the valve chamber 88'. Moreover, the vacuum port 96' is preferably disposed between, and spaced circumferentially apart from the reference and vent ports 94', 102'. A circumferentially extending recess 110 of the elongated shaft 106 106' is open radially outward and aligns axially to and is thus in communication with the valve chamber 88 88' of the bore 108. The recess 110 extends circumferentially approximately 340 degrees. The remaining twenty degrees, which has a circumferential surface which is flush with the outer cylindrical surface of the shaft 106

106', provides the valve head 98' of the rotating shaft 106 106'. The recess 110 is rotatably received in the bore 108 and sealed therewith adjacent its axial edges.

[0037] When the integrated throttling choke valve 12 12' is in the closed position 74 74', as best shown in FIG. 5, the recess 110 of the elongated shaft 106 106' is misaligned circumferentially to the vacuum port 96'. The valve head 98', which is aligned circumferentially to the vacuum port 96', isolates the vacuum port 96' and associated second leg 92' of the reference passage 52 52'. The reference chamber 44 44' is thus vented solely to the atmospheric air source 20 12' via the vent passage 104 104', the recess 110 and the first leg 90' of the reference passage 52 52'.

[0038] When the integrated throttling choke valve 12 12' is in the idle position 62 62', as best shown in FIG. 6, the recess 110 is misaligned circumferentially to the vent port 102'. The valve head 98', which is aligned circumferentially to the vent port 102', isolates the vent port 102' and associated vent passage 104 104'. The reference chamber 44 is thus exposed solely to the vacuum induced at the secondary venturi 72 72' via the first and second legs 90', 92' and the intersecting recess 102'.

[0039] When the integrated throttling choke valve 12 12' is in a position opened wider than the idle position 62 62', or is in the open position 50 50', as best shown in FIG. 7, the recess 110 is aligned circumferentially to the reference, vacuum and vent ports 94', 96', 102'. The valve head 98' is misaligned circumferentially to all the ports within the valve chamber 88'. Consequently, the reference chamber 44 44' is exposed to the atmospheric air source 20 20' via the first leg 90', the recess 110 and the vent passage 104', and is exposed to the pressure at the reference nozzle 54 54', which is near

atmospheric pressure when the choke valve 12 12' is in the open position 50 50', via the second leg 92', the recess 110 and the first leg 90' of the reference passage 52 52'.